November 4, 1955

Dr. Linus Pauling
Chemistry Laboratories
California Institute of Technology
Pasadena 4, California

Dear Dr. Pauling:

On two occasions when I have been privileged to hear you speak, you have made the point that intermolecular forces in crystallization are based on self-complementarity rather than an any system of attraction of like structures. I must confess that I am somewhat puzzled by the argument, perhaps because of the distance of my own specialization.

May I put my question in this form. If any two molecular species, A and B are chosen at random, on what basis is it more likely that A will be complementary to A than to B? If the latter were as likely, then mixed crystals should be as prevalent as pure, which, I gather, is not so. To be more explicit, why is glucose a closer <u>complementary</u> fit on glucose than, say, on galactose? If self-complementarity is a rule among organic molecules is this a necessary feature of molecular structure, or a rule that is unique to compounds of biological interest?

Yours sincerely,

Joshua Lederberg
Professor of Genetics

P.S. In your talk at Detroit, I especially enjoyed your allusion to the Landsteinerian vs. Paulingian experimental logics, which stated very well the divergence of approach among at least some physicists and some biologists. I have to admit that I incline myself to Landsteiner's orientation, and recognize what a serious constraint it is.